

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT				1. CONTRACT ID CODE <div style="text-align: center;">J</div>		PAGE OF PAGES <div style="text-align: center;">1 2</div>	
2. AMENDMENT/MODIFICATION NO. <div style="text-align: center;">0001</div>		3. EFFECTIVE DATE <div style="text-align: center;">09-Aug-2002</div>		4. REQUISITION/PURCHASE REQ. NO. <div style="text-align: center;">W22W9K-2169-6544</div>		5. PROJECT NO.(If applicable)	
6. ISSUED BY USA ENGINEER DISTRICT, LOUISVILLE ATTN: CELRL-CT 600 DR. MARTIN LUTHER KING PLACE ROOM 821 LOUISVILLE KY 40202		CODE <div style="text-align: center;">DACW27</div>		7. ADMINISTERED BY (If other than item 6) CONTRACT ADMINISTRATION BRANCH ATTN: TOM E. DICKERT P. O. BOX 59 LOUISVILLE KY 40201-0059		CODE <div style="text-align: center;">DACW27</div>	
8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)				X		9A. AMENDMENT OF SOLICITATION NO. DACW27-02-B-0015	
				X		9B. DATED (SEE ITEM 11) 11-Jul-2002	
						10A. MOD. OF CONTRACT/ORDER NO.	
						10B. DATED (SEE ITEM 13)	
CODE		FACILITY CODE					
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS							
<input checked="" type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer <input type="checkbox"/> is extended, <input checked="" type="checkbox"/> is not extended. Offer must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.							
12. ACCOUNTING AND APPROPRIATION DATA (If required)							
13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.							
A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.							
B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).							
C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:							
D. OTHER (Specify type of modification and authority)							
E. IMPORTANT: Contractor <input type="checkbox"/> is not, <input type="checkbox"/> is required to sign this document and return _____ copies to the issuing office.							
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.) DACW27-02-B-0015, Indianapolis North Flood Reduction Project, Warfleigh Section - Phase IIIA, Indianapolis, IN See attached Plans and Specifications changes.							
Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.							
15A. NAME AND TITLE OF SIGNER (Type or print)				16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)			
				TEL: _____ EMAIL: _____			
15B. CONTRACTOR/OFFEROR _____ (Signature of person authorized to sign)		15C. DATE SIGNED		16B. UNITED STATES OF AMERICA BY _____ (Signature of Contracting Officer)		16C. DATE SIGNED 12-Aug-2002	

SECTION SF 30 BLOCK 14 CONTINUATION PAGE

SUMMARY OF CHANGES

SECTION SF 30 - BLOCK 14 CONTINUATION PAGE

The following have been added by full text:

AMENDMENT 0001 DESCRIPTION

1. Standard Form 1442, Solicitation, Offer, and Award Form, Block 10 – The statement, “THE ESTIMATED COST RANGE FOR THIS PROJECT IS \$5,000,000.00 TO \$10,000,000.00” is changed to “THE ESTIMATED COST RANGE FOR THIS PROJECT IS \$1,000,000.00 TO \$5,000,000.00”.

2. Specifications:

Section 01312A is hereby added to the solicitation.

Section 01500A is hereby deleted in its entirety. Section 01500A, Amdt. #0001, is added.

Section 02513 - Paragraph 1.8.1, change "The gate shown on sheet C-33" to "The gate shown on sheet C-12".

Section 02921A is hereby deleted in its entirety. Section 02921A, Amdt. #0001, is added.

Section 03101A is hereby deleted in its entirety. Section 03101A, Amdt. #0001, is added.

3. Drawings:

C-1, CD-1, and CD-3 are deleted and replaced.

(End of Summary of Changes)

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SECTION 01312A

QUALITY CONTROL SYSTEM (QCS)

08/01

PART 1 GENERAL

1.1 PURPOSE

The Government will use the Resident Management System for Windows (RMS) to assist in its monitoring and administration of this contract. The Contractor shall use the Government-furnished Construction Contractor Module of RMS, referred to as QCS, to record, maintain, and submit various information throughout the contract period. This joint Government-Contractor use of RMS and QCS will facilitate electronic exchange of information and overall management of the contract. QCS provides the means for the Contractor to input, track, and electronically share information with the Government in the following areas:

- Administration
- Finances
- Quality Control
- Submittal Monitoring
- Scheduling
- Import/Export of Data

1.1.1 Correspondence and Electronic Communications

For ease and speed of communications, both Government and Contractor will, to the maximum extent feasible, exchange correspondence and other documents in electronic format. Correspondence, pay requests and other documents comprising the official contract record shall also be provided in paper format, with signatures and dates where necessary. Paper documents will govern, in the event of discrepancy with the electronic version.

1.1.2 Other Factors

Particular attention is directed to Contract Clause, "Schedules for Construction Contracts", Contract Clause, "Payments", Section 01330, SUBMITTAL PROCEDURES, and Section 01451, CONTRACTOR QUALITY CONTROL, which have a direct relationship to the reporting to be accomplished through QCS.

Also, there is no separate payment for establishing and maintaining the QCS database; all costs associated therewith shall be included in the contract pricing for the work.

1.2 QCS SOFTWARE

QCS is a Windows-based program that can be run on a stand-alone personal

computer or on a network. The Government will make available the QCS software to the Contractor after award of the construction contract. Prior to the Pre-Construction Conference, the Contractor shall be responsible to download, install and use the latest version of the QCS software from the Government's RMS Internet Website. Upon specific justification and request by the Contractor, the Government can provide QCS on 3-1/2 inch high-density diskettes or CD-ROM. Any program updates of QCS will be made available to the Contractor via the Government RMS Website as they become available.

1.3 SYSTEM REQUIREMENTS

The following listed hardware and software is the minimum system configuration that the Contractor shall have to run QCS:

Hardware

IBM-compatible PC with 200 MHz Pentium or higher processor

32+ MB RAM

4 GB hard drive disk space for sole use by the QCS system

3 1/2 inch high-density floppy drive

Compact disk (CD) Reader

Color monitor

Laser printer compatible with HP LaserJet III or better, with minimum 4 MB installed memory.

Connection to the Internet, minimum 28 BPS

Software

MS Windows 95 or newer version operating system (MS Windows NT 4.0 or newer is recommended)

Word Processing software compatible with MS Word 97 or newer

Internet browser

The Contractor's computer system shall be protected by virus protection software that is regularly upgraded with all issued manufacturer's updates throughout the life of the contract.

Electronic mail (E-mail) compatible with MS Outlook

1.4 RELATED INFORMATION

1.4.1 QCS User Guide

After contract award, the Contractor shall download instructions for the installation and use of QCS from the Government RMS Internet Website; the Contractor can obtain the current address from the Government. In case of justifiable difficulties, the Government will provide the Contractor with a CD-ROM containing these instructions.

1.4.2 Contractor Quality Control(CQC) Training

The use of QCS will be discussed with the Contractor's QC System Manager during the mandatory CQC Training class.

1.5 CONTRACT DATABASE

Prior to the pre-construction conference, the Government shall provide the Contractor with basic contract award data to use for QCS. The Government will provide data updates to the Contractor as needed, generally by files attached to E-mail. These updates will generally consist of submittal reviews, correspondence status, QA comments, and other administrative and QA data.

1.6 DATABASE MAINTENANCE

The Contractor shall establish, maintain, and update data for the contract in the QCS database throughout the duration of the contract. The Contractor shall establish and maintain the QCS database at the Contractor's site office. Data updates to the Government shall be submitted by E-mail with file attachments, e.g., daily reports, schedule updates, payment requests. If permitted by the Contracting Officer, a data diskette or CD-ROM may be used instead of E-mail (see Paragraph DATA SUBMISSION VIA COMPUTER DISKETTE OR CD-ROM). The QCS database typically shall include current data on the following items:

1.6.1 Administration

1.6.1.1 Contractor Information

The database shall contain the Contractor's name, address, telephone numbers, management staff, and other required items. Within 14 calendar days of receipt of QCS software from the Government, the Contractor shall deliver Contractor administrative data in electronic format via E-mail.

1.6.1.2 Subcontractor Information

The database shall contain the name, trade, address, phone numbers, and other required information for all subcontractors. A subcontractor must be listed separately for each trade to be performed. Each subcontractor/trade shall be assigned a unique Responsibility Code, provided in QCS. Within 14 calendar days of receipt of QCS software from the Government, the Contractor shall deliver subcontractor administrative data in electronic format via E-mail.

1.6.1.3 Correspondence

All Contractor correspondence to the Government shall be identified with a serial number. Correspondence initiated by the Contractor's site office shall be prefixed with "S". Letters initiated by the Contractor's home (main) office shall be prefixed with "H". Letters shall be numbered starting from 0001. (e.g., H-0001 or S-0001). The Government's letters to the Contractor will be prefixed with "C".

1.6.1.5 Equipment

The Contractor's QCS database shall contain a current list of equipment planned for use or being used on the jobsite, including the most recent and planned equipment inspection dates.

1.6.1.7 Management Reporting

QCS includes a number of reports that Contractor management can use to track the status of the project. The value of these reports is reflective of the quality of the data input, and is maintained in the various sections of QCS. Among these reports are: Progress Payment Request worksheet, QA/QC comments, Submittal Register Status, Three-Phase Inspection checklists.

1.6.2 Finances

1.6.2.1 Pay Activity Data

The QCS database shall include a list of pay activities that the Contractor shall develop in conjunction with the construction schedule. The sum of all pay activities shall be equal to the total contract amount, including modifications. Pay activities shall be grouped by Contract Line Item Number (CLIN), and the sum of the activities shall equal the amount of each CLIN. The total of all CLINs equals the Contract Amount.

1.6.2.2 Payment Requests

All progress payment requests shall be prepared using QCS. The Contractor shall complete the payment request worksheet and include it with the payment request. The work completed under the contract, measured as percent or as specific quantities, shall be updated at least monthly. After the update, the Contractor shall generate a payment request report using QCS. The Contractor shall submit the payment requests with supporting data by E-mail with file attachment(s). If permitted by the Contracting Officer, a data diskette may be used instead of E-mail. A signed paper copy of the approved payment request is also required, which shall govern in the event of discrepancy with the electronic version.

1.6.3 Quality Control (QC)

QCS provides a means to track implementation of the 3-phase QC Control System, prepare daily reports, identify and track deficiencies, document progress of work, and support other contractor QC requirements. The Contractor shall maintain this data on a daily basis. Entered data will automatically output to the QCS generated daily report. The Contractor shall provide the Government a Contractor Quality Control (CQC) Plan within

the time required in Section 01451, CONTRACTOR QUALITY CONTROL. Within seven calendar days of Government acceptance, the Contractor shall submit a data diskette or CD-ROM reflecting the information contained in the accepted CQC Plan: schedule, pay activities, features of work, submittal register, QC requirements, and equipment list.

1.6.3.1 Daily Contractor Quality Control (CQC) Reports.

QCS includes the means to produce the Daily CQC Report. The Contractor may use other formats to record basic QC data. However, the Daily CQC Report generated by QCS shall be the Contractor's official report. Data from any supplemental reports by the Contractor shall be summarized and consolidated onto the QCS-generated Daily CQC Report. Daily CQC Reports shall be submitted as required by Section 01451, CONTRACTOR QUALITY CONTROL. Reports shall be submitted electronically to the Government using E-mail or diskette within 24 hours after the date covered by the report. Use of either mode of submittal shall be coordinated with the Government representative. The Contractor shall also provide the Government a signed, printed copy of the daily CQC report.

1.6.3.2 Deficiency Tracking.

The Contractor shall use QCS to track deficiencies. Deficiencies identified by the Contractor will be numerically tracked using QC punch list items. The Contractor shall maintain a current log of its QC punch list items in the QCS database. The Government will log the deficiencies it has identified using its QA punch list items. The Government's QA punch list items will be included in its export file to the Contractor. The Contractor shall regularly update the correction status of both QC and QA punch list items.

1.6.3.3 Three-Phase Control Meetings

The Contractor shall maintain scheduled and actual dates and times of preparatory and initial control meetings in QCS.

1.6.3.4 Accident/Safety Tracking.

The Government will issue safety comments, directions, or guidance whenever safety deficiencies are observed. The Government's safety comments will be included in its export file to the Contractor. The Contractor shall regularly update the correction status of the safety comments. In addition, the Contractor shall utilize QCS to advise the Government of any accidents occurring on the jobsite. This brief supplemental entry is not to be considered as a substitute for completion of mandatory reports, e.g., ENG Form 3394 and OSHA Form 200.

1.6.3.5 Features of Work

The Contractor shall include a complete list of the features of work in the QCS database. A feature of work may be associated with multiple pay activities. However, each pay activity (see subparagraph "Pay Activity Data" of paragraph "Finances") will only be linked to a single feature of work.

1.6.3.6 QC Requirements

The Contractor shall develop and maintain a complete list of QC testing, transferred and installed property, and user training requirements in QCS. The Contractor shall update all data on these QC requirements as work progresses, and shall promptly provide this information to the Government via QCS.

1.6.4 Submittal Management

The Government will provide the initial submittal register, ENG Form 4288, SUBMITTAL REGISTER, in electronic format. Thereafter, the Contractor shall maintain a complete list of all submittals, including completion of all data columns. Dates on which submittals are received and returned by the Government will be included in its export file to the Contractor. The Contractor shall use QCS to track and transmit all submittals. ENG Form 4025, submittal transmittal form, and the submittal register update, ENG Form 4288, shall be produced using QCS. RMS will be used to update, store and exchange submittal registers and transmittals, but will not be used for storage of actual submittals.

1.6.5 Schedule

The Contractor shall develop a construction schedule consisting of pay activities, in accordance with Contract Clause "Schedules for Construction Contracts". This schedule shall be input and maintained in the QCS database either manually or by using the Standard Data Exchange Format (SDEF). The updated schedule data shall be included with each pay request submitted by the Contractor.

1.6.6 Import/Export of Data

QCS includes the ability to export Contractor data to the Government and to import submittal register and other Government-provided data, and schedule data using SDEF.

1.7 IMPLEMENTATION

Contractor use of QCS as described in the preceding paragraphs is mandatory. The Contractor shall ensure that sufficient resources are available to maintain its QCS database, and to provide the Government with regular database updates. QCS shall be an integral part of the Contractor's management of quality control.

1.8 DATA SUBMISSION VIA COMPUTER DISKETTE OR CD-ROM

The Government-preferred method for Contractor's submission of updates, payment requests, correspondence and other data is by E-mail with file attachment(s). For locations where this is not feasible, the Contracting Officer may permit use of computer diskettes or CD-ROM for data transfer. Data on the disks or CDs shall be exported using the QCS built-in export function. If used, diskettes and CD-ROMs will be submitted in accordance with the following:

1.8.1 File Medium

The Contractor shall submit required data on 3-1/2 inch double-sided high-density diskettes formatted to hold 1.44 MB of data, capable of running under Microsoft Windows 95 or newer. Alternatively, CD-ROMs may be used. They shall conform to industry standards used in the United States. All data shall be provided in English.

1.8.2 Disk or CD-ROM Labels

The Contractor shall affix a permanent exterior label to each diskette and CD-ROM submitted. The label shall indicate in English, the QCS file name, full contract number, contract name, project location, data date, name and telephone number of person responsible for the data.

1.8.3 File Names

The Government will provide the file names to be used by the Contractor with the QCS software.

1.9 MONTHLY COORDINATION MEETING

The Contractor shall update the QCS database each workday. At least monthly, the Contractor shall generate and submit an export file to the Government with schedule update and progress payment request. As required in Contract Clause "Payments", at least one week prior to submittal, the Contractor shall meet with the Government representative to review the planned progress payment data submission for errors and omissions. The Contractor shall make all required corrections prior to Government acceptance of the export file and progress payment request. Payment requests accompanied by incomplete or incorrect data submittals will be returned. The Government will not process progress payments until an acceptable QCS export file is received.

1.10 NOTIFICATION OF NONCOMPLIANCE

The Contracting Officer will notify the Contractor of any detected noncompliance with the requirements of this specification. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification.

1.11 PAYMENT

No separate payment will be made for the work in this section. This work is considered a subsidiary obligation of the Contractor.

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SECTION 01500A

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02/97

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SECTION 01500A

TEMPORARY CONSTRUCTION FACILITIES

02/97

PART 1 GENERAL1.1 GENERAL REQUIREMENTS

1.1.1 Site Plan

The Contractor shall prepare a site plan indicating the proposed location and dimensions of any area to be fenced and used by the Contractor, the number of trailers to be used, avenues of ingress/egress to the fenced area and details of the fence installation. Any areas which may have to be graveled to prevent the tracking of mud shall also be identified. The Contractor shall also indicate if the use of a supplemental or other staging area is desired.

1.1.2 Identification of Employees

The Contractor shall be responsible for furnishing to each employee, and for requiring each employee engaged on the work to display, identification as approved and directed by the Contracting Officer. Prescribed identification shall immediately be delivered to the Contracting Officer for cancellation upon release of any employee. When required, the Contractor shall obtain and provide fingerprints of persons employed on the project. Contractor and subcontractor personnel shall wear identifying markings on hard hats clearly identifying the company for whom the employee works.

1.1.3 Employee Parking

Contractor employees shall park privately owned vehicles in an area designated by the Contracting Officer. This area will be within reasonable walking distance of the construction site. Contractor employee parking shall not interfere with existing and established parking requirements of the military installation.

1.2 NOT USED.

1.3 BULLETIN BOARD, PROJECT SIGN, AND PROJECT SAFETY SIGN

1.3.1 Bulletin Board

Immediately upon beginning of work, the Contractor shall provide a weatherproof glass-covered bulletin board not less than 36 by 48 inches in size for displaying the Equal Employment Opportunity poster, a copy of the wage decision contained in the contract, Wage Rate Information poster, and other information approved by the Contracting Officer. The bulletin board shall be located at the project site in a conspicuous place easily accessible to all employees, as approved by the Contracting Officer.

Legible copies of the aforementioned data shall be displayed until work is completed. Upon completion of work the bulletin board shall be removed by and remain the property of the Contractor.

1.3.2 Project and Safety Signs

The requirements for the signs, their content, and location shall be as shown on the drawings. The signs shall be erected within 15 days after receipt of the notice to proceed. The data required by the safety sign shall be corrected daily, with light colored metallic or non-metallic numerals. Upon completion of the project, the signs shall be removed from the site.

1.4 PROTECTION AND MAINTENANCE OF TRAFFIC

During construction the Contractor shall provide access and temporary relocated roads as necessary to maintain traffic. The Contractor shall maintain and protect traffic on all affected roads during the construction period except as otherwise specifically directed by the Contracting Officer. Measures for the protection and diversion of traffic, including the provision of watchmen and flagmen, erection of barricades, placing of lights around and in front of equipment and the work, and the erection and maintenance of adequate warning, danger, and direction signs, shall be as required by the State and local authorities having jurisdiction. The traveling public shall be protected from damage to person and property. The Contractor's traffic on roads selected for hauling material to and from the site shall interfere as little as possible with public traffic. The Contractor shall investigate the adequacy of existing roads and the allowable load limit on these roads. The Contractor shall be responsible for the repair of any damage to roads caused by construction operations.

1.4.1 Haul Roads

The Contractor shall, at its own expense, construct access and haul roads necessary for proper prosecution of the work under this contract. Haul roads shall be constructed with suitable grades and widths; sharp curves, blind corners, and dangerous cross traffic shall be avoided. The Contractor shall provide necessary lighting, signs, barricades, and distinctive markings for the safe movement of traffic. The method of dust control, although optional, shall be adequate to ensure safe operation at all times. Location, grade, width, and alignment of construction and hauling roads shall be subject to approval by the Contracting Officer. Lighting shall be adequate to assure full and clear visibility for full width of haul road and work areas during any night work operations. Upon completion of the work, haul roads designated by the Contracting Officer shall be removed.

1.4.2 Barricades

The Contractor shall erect and maintain temporary barricades to limit public access to hazardous areas. Such barricades shall be required whenever safe public access to paved areas such as roads, parking areas or sidewalks is prevented by construction activities or as otherwise necessary to ensure the safety of both pedestrian and vehicular traffic. Barricades

shall be securely placed, clearly visible with adequate illumination to provide sufficient visual warning of the hazard during both day and night.

1.5 CONTRACTOR'S TEMPORARY FACILITIES

1.5.1 Administrative Field Offices

The Contractor shall provide and maintain administrative field office facilities within the construction area at the designated site. Government office and warehouse facilities will not be available to the Contractor's personnel.

The Contractor shall provide and maintain within the construction area minimum field-type sanitary facilities approved by the Contracting Officer.

Government toilet facilities will not be available to Contractor's personnel.

The Contractor shall obtain all desired utilities at the Contractor's expense - there are no government supplied or available utilities.

1.5.2 Storage Area

The Contractor shall construct a temporary 6 foot high chain link fence around trailers and materials. The fence shall include plastic strip inserts, colored green, so that visibility through the fence is obstructed.

Fence posts may be driven, in lieu of concrete bases, where soil conditions permit. Trailers, materials, or equipment shall not be placed or stored outside the fenced area unless such trailers, materials, or equipment are assigned a separate and distinct storage area by the Contracting Officer away from the vicinity of the construction site but within the military boundaries. Trailers, equipment, or materials shall not be open to public view with the exception of those items which are in support of ongoing work on any given day. Materials shall not be stockpiled outside the fence in preparation for the next day's work. Mobile equipment, such as tractors, wheeled lifting equipment, cranes, trucks, and like equipment, shall be parked within the fenced area at the end of each work day.

1.5.3 Supplemental Storage Area

Upon Contractor's request, the Contracting Officer will designate another or supplemental area for the Contractor's use and storage of trailers, equipment, and materials. This area may not be in close proximity of the construction site but shall be within the military boundaries. Fencing of materials or equipment will not be required at this site; however, the Contractor shall be responsible for cleanliness and orderliness of the area used and for the security of any material or equipment stored in this area.

Utilities will not be provided to this area by the Government.

1.5.4 Appearance of Trailers

Trailers utilized by the Contractor for administrative or material storage purposes shall present a clean and neat exterior appearance and shall be in a state of good repair. Trailers which, in the opinion of the Contracting Officer, require exterior painting or maintenance will not be allowed on the military property.

1.5.5 Maintenance of Storage Area

Fencing shall be kept in a state of good repair and proper alignment. Should the Contractor elect to traverse, with construction equipment or other vehicles, grassed or unpaved areas which are not established roadways, such areas shall be covered with a layer of gravel as necessary to prevent rutting and the tracking of mud onto paved or established roadways; gravel gradation shall be at the Contractor's discretion. Grass located within the boundaries of the construction site shall be mowed for the duration of the project. Grass and vegetation along fences, buildings, under trailers, and in areas not accessible to mowers shall be edged or trimmed neatly.

1.5.6 NOT USED.

1.5.7 Security Provisions

Adequate outside security lighting shall be provided at the Contractor's temporary facilities. The Contractor shall be responsible for the security of its own equipment; in addition, the Contractor shall notify the appropriate law enforcement agency requesting periodic security checks of the temporary project field office.

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1.6 GOVERNMENT FIELD OFFICE

Provide an office trailer in the field to the west of the intersection of Riverview Drive and 64th Street in Indianapolis for Corps of Engineers personnel.

1.6.1. Trailer shall be 12ft wide and 56ft long with three offices. 12ft by 12ft offices shall be provided at each end of the building with 12ft by 32ft conference room office in the center. A handicapped-accessible half-bath shall also be provided within the center office area. Note that all dimensions proposed herein are nominal, and other dimensions shall be considered for any readily available office unit.

1.6.2. Trailer shall be in a "like-new" condition and shall be provided with skirting as required to present a pleasing appearance for a residential neighborhood.

1.6.3. Trailer shall be provided with 2 entrances with steps, and shall be securely anchored at each corner as required by EM385-1-1. Doors shall be provided secure with deadbolts or padlocks.

1.6.4. Trailer shall be located adjacent to the existing gravel service access drive to the river. Exact trailer location shall be as directed on the field by the Contracting Officer's Representative.

1.6.5. Trailer shall be provided complete with furniture. The two 12x12 offices shall each be provided with a 34-in by 72-in workstation desk and chair and with a 30-in by 72-in work table. The conference room office

shall be provided with a 48-in by 96-in conference table with 8 folding-type chairs, and a 30-in by 72-in work table. A total of two bookshelf cabinets and three full-size filing cabinets shall also be provided. Note that all dimensions proposed herein are nominal, and other dimensions shall be considered for any readily available furniture.

1.6.6. Trailer to be provided with central heat/air conditioning shall be provided as required to maintain a temperature of approximately 70 degrees F throughout the calendar year.

1.6.7. Fluorescent lighting shall be throughout the trailer, sufficient to provide an intensity appropriate for an office occupancy.

1.6.8. A handicap-rated water closet and hand washing sink shall be provided complete with connections to water and sanitary sewer mains. All costs for these utilities and connections thereto shall be borne by the contractor.

1.6.9. A 120/240 volt 125amp (minimum) single phase electrical service shall be provided to this trailer. All costs for electricity and service connections at the existing power pole shall be borne by the contractor.

1.6.10. Three telephone lines shall be provided to this trailer. One telephone jack will be provided in each of the 12ft by 12ft offices, and the remaining jack shall be located in the conference room area. All costs for telephone service and connections thereto shall be borne by the contractor. Exact jack locations shall be as directed on the field by the Contracting Officer's Representative.

1.6.11. Two high-speed internet connections shall be provided. Connections shall be DSL or Cablemodem type. One connection shall be provided in each of the two 12x12 offices. All costs for internet service and connections thereto shall be borne by the contractor. Exact connection locations shall be as directed on the field by the Contracting Officer's Representative.

1.6.12. A mail slot in the door or a lockable mail box mounted on the surface of the door shall be provided.

1.6.13. A 250Watt high pressure sodium security light (with photoelectric control) shall be provided to illuminate the office trailer and access drive.

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1.7 PLANT COMMUNICATION

Whenever the Contractor has the individual elements of its plant so located that operation by normal voice between these elements is not satisfactory, the Contractor shall install a satisfactory means of communication, such as telephone or other suitable devices. The devices shall be made available for use by Government personnel.

1.8 TEMPORARY PROJECT SAFETY FENCING

The Contractor shall furnish and erect temporary project safety fencing at the work site for any ongoing work areas as approved by the Contracting Officer. The safety fencing shall be a high visibility orange colored, high density polyethylene grid or approved equal, a minimum of 42 inches high, supported and tightly secured to steel posts located on maximum 10 foot centers, constructed at the approved location. The safety fencing shall be maintained by the Contractor during the life of the contract and, upon completion and acceptance of the work, shall become the property of the Contractor and shall be removed from the work site.

1.9 CLEANUP

Construction debris, waste materials, packaging material and the like shall be removed from the work site daily. Any dirt or mud which is tracked onto paved or surfaced roadways shall be cleaned away. Materials resulting from demolition activities which are salvageable shall be stored within the fenced area described above or at the supplemental storage area. Stored material not in trailers, whether new or salvaged, shall be neatly stacked when stored.

1.10 RESTORATION OF STORAGE AREA

Upon completion of the project and after removal of trailers, materials, and equipment from within the fenced area, the fence shall be removed and will become the property of the Contractor. Areas used by the Contractor for the storage of equipment or material, or other use, shall be restored to the original or better condition. Gravel used to traverse grassed areas shall be removed and the area restored to its original condition, including top soil and seeding as necessary.

-- End of Section --

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05/01

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SECTION 02921A

SEEDING
05/01

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

U.S. DEPARTMENT OF AGRICULTURE (USDA)

AMS Seed Act (1995) Federal Seed Act Regulations Part 201

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 602 (1995a) Agricultural Liming Materials

ASTM D 977 (1998) Emulsified Asphalt

ASTM D 2028 (1976; R 1997) Cutback Asphalt (Rapid-Curing Type)

ASTM D 4972 (1995a) pH of Soils

ASTM D 5268 (1992; R 1996) Topsoil Used for Landscaping Purposes

ASTM D 5883 (1996el) Use of Rotary Kiln Produced Expanded Shale, Clay or Slate (ESCS) as a Mineral Amendment in Topsoil Used for Landscaping and Related Purposes

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-03 Product Data

Equipment; G,RE
Surface Erosion Control Material; G,RE
Chemical Treatment Material; G,RE

Manufacturer's literature including physical characteristics, application and installation instructions for equipment, surface erosion control material and chemical treatment material.

A listing of equipment to be used for the seeding operation.

Delivery;

Delivery schedule.

Finished Grade and Topsoil;

Finished grade status.

Topsoil;

Availability of topsoil from the stripping and stock piling operation.

Quantity Check;

Bag count or bulk weight measurements of material used compared with area covered to determine the application rate and quantity installed.

Seed Establishment Period;

Calendar time period for the seed establishment period. When there is more than one seed establishment period, the boundaries of the seeded area covered for each period shall be described.

Maintenance Record; G,RE

Maintenance work performed, area repaired or reinstalled, diagnosis for unsatisfactory stand of grass plants.

Application of Herbicide ; G,RE

Herbicide treatment plan with sequence of treatment work with dates and times. The herbicide trade name, EPA registration number, chemical composition, formulation, concentration of original and diluted material, application rate of active ingredients, method of application, area treated, amount applied; and the name and state license number of the state certified applicator shall be included.

SD-04 Samples

Delivered Topsoil;

Samples taken from several locations at the source.

Soil Amendments;

A 10 pound sample.

Mulch;

A 10 pound sample.

SD-06 Test Reports

Equipment Calibration;

Certification of calibration tests conducted on the equipment used in the seeding operation.

Soil Test;

Certified reports of inspections and laboratory tests, prepared by an independent testing agency, including analysis and interpretation of test results. Each report shall be properly identified. Test methods used and compliance with recognized test standards shall be described.

SD-07 Certificates

Seed; G,RE
Topsoil;
pH Adjuster;
Fertilizer;
Organic Material;
Soil Conditioner;
Mulch;
Asphalt Adhesive;
Herbicide;

Prior to the delivery of materials, certificates of compliance attesting that materials meet the specified requirements. Certified copies of the material certificates shall include the following:

- a. Seed(other than wildflower and native grasses).
Classification, botanical name, common name, percent pure live seed, minimum percent germination and hard seed, maximum percent weed seed content, and date tested.
Seed(wildflower and native grasses. Name and location of seed supplier.
Origin and date of harvest.
Seed germination statement.
- b. Topsoil. Particle size, pH, organic matter content, textural class, soluble salts, chemical and mechanical analyses.
- c. pH Adjuster. Calcium carbonate equivalent and sieve analysis.
- d. Fertilizer. Chemical analysis and composition percent.

- e. Organic Material: Composition and source.
- f. Soil Conditioner: Composition and source.
- g. Mulch: Composition and source.
- h. Asphalt Adhesive: Composition.
- i. Herbicide. EPA registration number and registered uses.

1.3 SOURCE INSPECTION

The source of delivered topsoil shall be subject to inspection.

1.4 DELIVERY, INSPECTION, STORAGE, AND HANDLING

1.4.1 Delivery

A delivery schedule shall be provided at least 10 calendar days prior to the first day of delivery.

1.4.1.1 Delivered Topsoil

Prior to the delivery of any topsoil, its availability shall be verified in paragraph TOPSOIL. A soil test shall be provided for topsoil delivered to the site.

1.4.1.2 Soil Amendments

Soil amendments shall be delivered to the site in the original, unopened containers bearing the manufacturer's chemical analysis. In lieu of containers, soil amendments may be furnished in bulk. A chemical analysis shall be provided for bulk deliveries.

1.4.1.3 Herbicides

Herbicide material shall be delivered to the site in the original, unopened containers bearing legible labels indicating the EPA registration number and the manufacturer's registered uses.

1.4.2 Inspection

Seed shall be inspected upon arrival at the job site for conformity to species and quality. Seed that is wet, moldy, or bears a test date five months or older, shall be rejected. Other materials shall be inspected for compliance with specified requirements. The following shall be rejected: open soil amendment containers or wet soil amendments; topsoil that contains slag, cinders, stones, lumps of soil, sticks, roots, trash or other material over a minimum 1-1/2 inch diameter; and topsoil that contains viable plants and plant parts. Unacceptable materials shall be removed from the job site.

1.4.3 Storage

Materials shall be stored in designated areas. Seed, lime, and fertilizer shall be stored in cool, dry locations away from contaminants. Chemical treatment material shall be stored according to manufacturer's instructions and not with seeding operation materials.

1.4.4 Handling

Except for bulk deliveries, materials shall not be dropped or dumped from vehicles.

1.4.5 Time Limitation

Hydroseeding time limitation for holding seed in the slurry shall be a maximum 24 hours.

1.5 PAYMENT

All work in this section shall be paid for under the Bid Item "Lump Sum" as listed in the Bidding Schedule.

PART 2 PRODUCTS

2.1 SEED

2.1.1 Seed Classification

Top of existing levee and disturbed areas other than wildflower and native grasses area: State-certified seed of the latest season's crop shall be provided in original sealed packages bearing the producer's guaranteed analysis for percentages of mixture, purity, germination, hard seed, weed seed content, and inert material. Labels shall be in conformance with AMS Seed Act and applicable state seed laws.

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2.1.2 Permanent Seed Species and Mixtures:

Permanent seed species and mixtures shall be as follows:

PLANT MATERIAL TO BE USED ON TOP OF LEVEE AND DISTURBED AREAS(Other than Wildflower and Native Grasses area).

Botanical Name	Common Name	Lb/acre
Agrostis alba	Redtop	10
Avena sativa	Oats	10
Festuca rubra	Creeping Red Fescue	10
Lolium multiflorum	Annual Rye	10
Phleum praiense	Timothy	10
Poa pratensis	Kentucky Blue Grass	10

NATIVE GRASSES

Botanical Name	Common Name	lb../acre
<i>Andropogon gerardii</i>	Big Blue Stem	3
<i>Andropogon scoparius</i>	Little Blue Stem	3
<i>Bouteloua curtipendula</i>	Side Oats Grama	2
<i>Elymus canadensis</i>	Prairie Wild Rye	2
<i>Panicum virgatum</i>	Prairie Switch Grass	1
<i>Sorghastrum nutans</i>	Indian Grass	3

WILDFLOWERS

Botanical Name	Common Name	Oz/acre
<i>Anemone cylindrica</i>	Thimbleweed	1
<i>Baptisia leucantha</i>	White Wild Indigo	1.3
<i>Baptisia leucophaea</i>	Cream Wild Indigo	1.6
<i>Cassia fasciculata</i>	Partridge Pea	2
<i>Desmodium illinoiense</i>	Prairie Bundle-Flower	1
<i>Echinacea pallida</i>	Pale Purple Coneflower	4
<i>Eryngium yuccifolium</i>	Rattlesnake Master	2
<i>Liatris aspera</i>	Rough Blazing Star	3
<i>Liatris scariosa nieuwlandii</i>	Blazing Star	1
<i>Lupinus perennis</i>	Wild Lupine	2
<i>Monarda fistulosa</i>	Prairie Bergamot	0.3
<i>Petalostemum purpureum</i>	Purple Prairie Clover	3
<i>Ratibida pinnata</i>	Yellow Coneflower	4
<i>Rudbeckia hirta</i>	Black-Eyed Susan	3
<i>Silphium laciniatum</i>	Compass Plant	2
<i>Silphium terebinthinaceum</i>	Prairie Dock	1
<i>Solidago nemoralis</i>	Old-Field Goldenrod	1
<i>Solidago rigida</i>	Stiff Goldenrod	2
<i>Solidago speciosa</i>	Showy Goldenrod	1

Cover/Companion Crop:

Spring: Annual Rye (*Lolium multiflorum*) at 20 lbs. Per acre

Fall: Oats (*Avena sativa*) at 32 lbs. Per acre.

Cover/Companion Crop shall be planted at the amounts indicated above - higher amounts will impair the growth of the native vegetation.

2.1.3 Temporary Seed Species

Botanical Name	Common Name	Lb/acre
<i>Colium perene</i>	Ryegrass	45
<i>Avena sativa</i>	Oats	45

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2.1.4 Quality

Weed seed shall be a maximum 1 percent by weight of the total mixture.

2.1.5 Seed Mixing

The mixing of seed may be done by the seed supplier prior to delivery, or on site as directed.

2.1.6 Substitutions

Substitutions will not be allowed without written request and approval from the Contracting Officer.

2.2 TOPSOIL

Topsoil shall be as defined in ASTM D 5268. When available, the topsoil shall be the existing surface soil stripped and stockpiled onsite in accordance with Section 02300 EARTHWORK. When additional topsoil is required beyond the available topsoil from the stripping operation, topsoil shall be delivered and amended as recommended by the soil test for the seed specified. Topsoil shall be free from slag, cinders, stones, lumps of soil, sticks, roots, trash or other material over a minimum 1-1/2 inch diameter. Topsoil shall be free from viable plants and plant parts.

2.3 SOIL AMENDMENTS

Soil amendments shall consist of pH adjuster, fertilizer, organic material and soil conditioners meeting the following requirements. Vermiculite shall not be used.

2.3.1 pH Adjuster

The pH adjuster shall be an agricultural liming material in accordance with ASTM C 602. These materials may be burnt lime, hydrated lime, ground limestone, sulfur, or shells. The pH adjuster shall be used to create a favorable soil pH for the plant material specified.

2.3.1.1 Limestone

Limestone material shall contain a minimum calcium carbonate equivalent of 80 percent. Gradation: A minimum 95 percent shall pass through a No. 8 sieve and a minimum 55 percent shall pass through a No. 60 sieve. To raise soil pH, ground limestone shall be used.

2.3.1.2 Hydrated Lime

Hydrated lime shall contain a minimum calcium carbonate equivalent of 110 percent. Gradation: A minimum 100 percent shall pass through a No. 8 sieve and a minimum 97 percent shall pass through a No. 60 sieve.

2.3.1.3 Burnt Lime

Burnt lime shall contain a minimum calcium carbonate equivalent of 140 percent. Gradation: A minimum 95 percent shall pass through a No. 8 sieve and a minimum 35 percent shall pass through a No. 60 sieve.

2.3.2 Fertilizer

It shall be as recommended by the soil test.

2.3.3 Nitrogen Carrier Fertilizer

It shall be as recommended by the soil test. . Nitrogen carrier fertilizer shall be commercial grade, free flowing, and uniform in composition. The fertilizer may be a liquid nitrogen solution.

2.3.4 Organic Material

Organic material shall consist of either bonemeal, rotted manure, decomposed wood derivatives, recycled compost, or worm castings.

2.3.4.1 Bonemeal

Bonemeal shall be finely ground, steamed bone product containing from 2 to 4 percent nitrogen and 16 to 40 percent phosphoric acid.

2.3.4.2 Rotted Manure

Rotted manure shall be unleached horse, chicken or cattle manure containing a maximum 25 percent by volume of straw, sawdust, or other bedding materials. It shall contain no chemicals or ingredients harmful to plants.

The manure shall be heat treated to kill weed seeds and be free of stones, sticks, and soil.

2.3.4.3 Decomposed Wood Derivatives

Decomposed wood derivatives shall be ground bark, sawdust, yard trimmings, or other wood waste material that is free of stones, sticks, soil, and toxic substances harmful to plants, and is fully composted or stabilized with nitrogen.

2.3.4.4 Recycled Compost

Compost shall be a well decomposed, stable, weed free organic matter source. Compost shall be derived from food; agricultural or industrial residuals; biosolids (treated sewage sludge); yard trimmings; or source-separated or mixed solid waste. The compost shall possess no objectionable odors and shall not resemble the raw material from which it was derived. The material shall not contain substances toxic to plants. Gradation: The compost material shall pass through a 3/8 inch screen, possess a pH of 5.5 to 8.0, and have a moisture content between 35-55 percent by weight. The material shall not contain more than 1 percent by weight of man-made foreign matter. Compost shall be cleaned of plastic materials larger than 2 inches in length. Compost shall conform to EPA requirements in accordance with Section 01670 RECYCLED / RECOVERED MATERIALS.

2.3.4.5 Worm Castings

Worm castings shall be screened from worms and food source, and shall be commercially packaged.

2.3.5 Soil Conditioner

Soil conditioner shall be sand, super absorbent polymers, calcined clay, or gypsum for use singly or in combination to meet the requirements of the soil test.

2.3.5.1 Sand

Sand shall be clean and free of toxic materials. Gradation: A minimum 95 percent by weight shall pass a No. 10 sieve and a minimum 10 percent by weight shall pass a No. 16 sieve. Greensand shall be balanced with the inclusion of trace minerals and nutrients.

2.3.5.2 Super Absorbent Polymers

To improve water retention in soils, super absorbent polymers shall be sized and applied according to the manufacturer's recommendations. Polymers shall be added as a soil amendment and be cross-linked polyacrylamide, with an absorption capacity of 250-400 times its weight. Polymers shall also be added to the seed and be a starch grafted polyacrylonitrile, with graphite added as a tacky sticker. It shall have an absorption capacity of 100 plus times its weight.

2.3.5.3 Calcined Clay

Calcined clay shall be granular particles produced from montmorillonite clay calcined to a minimum temperature of 1200 degrees F. Gradation: A minimum 90 percent shall pass a No. 8 sieve; a minimum 99 percent shall be retained on a No. 60 sieve; and a maximum 2 percent shall pass a No. 100 sieve. Bulk density: A maximum 40 pounds per cubic foot.

2.3.5.4 Gypsum

Gypsum shall be commercially packaged, free flowing, and a minimum 95 percent calcium sulfate by volume.

2.3.5.5 Expanded Shale, Clay, or Slate (ESCS)

Rotary kiln produced ESCS material shall be in conformance with ASTM D 5883.

2.4 MULCH

Mulch shall be free from weeds, mold, and other deleterious materials. Mulch materials shall be native to the region.

2.4.1 Straw

Straw shall be stalks from oats, wheat, rye, barley, or rice, furnished in air-dry condition and with a consistency for placing with commercial mulch-blowing equipment.

2.4.2 Hay

Hay shall be native hay, sudan-grass hay, broomsedge hay, or other herbaceous mowings, furnished in an air-dry condition suitable for placing with commercial mulch-blowing equipment.

2.4.3 Wood Cellulose Fiber

Wood cellulose fiber shall not contain any growth or germination-inhibiting factors and shall be dyed an appropriate color to facilitate placement during application. Composition on air-dry weight basis: 9 to 15 percent moisture, pH range from 4.5 to 6.0.

2.4.4 Paper Fiber

Paper fiber mulch shall be recycled news print that is shredded for the purpose of mulching seed.

2.5 ASPHALT ADHESIVE

Asphalt adhesive shall conform to the following: Emulsified asphalt, conforming to ASTM D 977, Grade SS-1; and cutback asphalt, conforming to ASTM D 2028, Designation RC-70.

2.6 WATER

Water shall be the responsibility of the Contractor, unless otherwise noted. Water shall not contain elements toxic to plant life.

2.7 PESTICIDE

Pesticide shall be insecticide, herbicide, fungicide, nematocide, rodenticide or miticide. For the purpose of this specification, a soil fumigant shall have the same requirements as a pesticide. The pesticide material shall be EPA registered and approved.

2.8 SURFACE EROSION CONTROL MATERIAL

Surface erosion control material shall conform to the following:

2.8.1 Surface Erosion Control Blanket

Blanket shall be machine produced mat of wood excelsior formed from a web of interlocking wood fibers; covered on one side with either knitted straw blanket-like mat construction; covered with biodegradable plastic mesh; or interwoven biodegradable thread, plastic netting, or twisted kraft paper cord netting.

2.8.2 Surface Erosion Control Fabric

Fabric shall be knitted construction of polypropylene yarn with uniform mesh openings 3/4 to 1 inch square with strips of biodegradable paper. Filler paper strips shall have a minimum life of 6 months.

2.8.3 Surface Erosion Control Net

Net shall be heavy, twisted jute mesh, weighing approximately 1.22 pounds per linear yard and 4 feet wide with mesh openings of approximately 1 inch square.

2.8.4 Surface Erosion Control Chemicals

Chemicals shall be high-polymer synthetic resin or cold-water emulsion of selected petroleum resins.

2.8.5 Hydrophilic Colloids

Hydrophilic colloids shall be physiologically harmless to plant and animal life without phytotoxic agents. Colloids shall be naturally occurring, silicate powder based, and shall form a water insoluble membrane after curing. Colloids shall resist mold growth.

2.8.6 Erosion Control Material Anchors

Erosion control anchors shall be as recommended by the manufacturer.

PART 3 EXECUTION - SEEDING OF DISTURBED AREAS OTHER THAN WILDFLOWER AND NATIVE GRASSES AREA

3.1 INSTALLING SEED TIME AND CONDITIONS

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3.1.1 Seeding Time

Seed for top of levee and disturbed areas (other than the wildflower and native grasses area) shall be placed from 1 September to 15 October. Temporary and cover/companion crop seeding shall be placed as above and between 1 April and 15 May. Native seeds can only be planted May and June or after the first frost in the fall.

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3.1.2 Seeding Conditions

Seeding operations shall be performed only during periods when beneficial results can be obtained. When drought, excessive moisture, or other unsatisfactory conditions prevail, the work shall be stopped when directed.

When special conditions warrant a variance to the seeding operations, proposed alternate times shall be submitted for approval.

3.1.3 Equipment Calibration

Immediately prior to the commencement of seeding operations, calibration tests shall be conducted on the equipment to be used. These tests shall confirm that the equipment is operating within the manufacturer's specifications and will meet the specified criteria. The equipment shall be calibrated a minimum of once every day during the operation. The calibration test results shall be provided within 1 week of testing.

3.1.4 Soil Test

Delivered topsoil, existing soil in smooth graded areas, and stockpiled topsoil shall be tested in accordance with ASTM D 5268 and ASTM D 4972 for determining the particle size, pH, organic matter content, textural class, chemical analysis, soluble salts analysis, and mechanical analysis. Sample collection on site shall be random over the entire site. Sample collection for stockpiled topsoil shall be at different levels in the stockpile. The soil shall be free from debris, noxious weeds, toxic substances, or other materials harmful to plant growth. The test shall determine the quantities and type of soil amendments required to meet local growing conditions for the seed species specified.

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3.2 SITE PREPARATION

All Areas Except Wildflower And Native Grasses Area

3.2.1 Finished Grade and Topsoil

The Contractor shall verify that finished grades are as indicated on drawings, and the placing of topsoil, smooth grading, and compaction requirements have been completed in accordance with Section 02300 EARTHWORK, prior to the commencement of the seeding operation.

3.2.2 Application of Soil Amendments

3.2.2.1 Applying pH Adjuster

The pH adjuster shall be applied as recommended by the soil test. The pH adjuster shall be incorporated into the soil to a maximum 4 inch depth or may be incorporated as part of the tillage operation.

3.2.2.2 Applying Fertilizer

The fertilizer shall be applied as recommended by the soil test. Fertilizer shall be incorporated into the soil to a maximum 4 inch depth or may be incorporated as part of the tillage or hydroseeding operation.

3.2.2.3 Applying Soil Conditioner

The soil conditioner shall be as recommended by the soil test. The soil conditioner shall be spread uniformly over the soil a minimum 1 inch depth and thoroughly incorporated by tillage into the soil to a maximum 4 inch depth.

3.2.2.4 Applying Super Absorbent Polymers

Polymers shall be spread uniformly over the soil as recommended by the manufacturer and thoroughly incorporated by tillage into the soil to a maximum 4 inch depth.

3.2.3 Tillage

Soil on slopes up to a maximum 3-horizontal-to-1-vertical shall be tilled to a minimum 4 inch depth. On slopes between 3-horizontal-to-1-vertical and 1-horizontal-to-1 vertical, the soil shall be tilled to a minimum 2 inch depth by scarifying with heavy rakes, or other method. Rototillers shall be used where soil conditions and length of slope permit. On slopes 1-horizontal-to-1 vertical and steeper, no tillage is required. Drainage patterns shall be maintained as indicated on drawings. Areas compacted by construction operations shall be completely pulverized by tillage. Soil used for repair of surface erosion or grade deficiencies shall conform to topsoil requirements. The pH adjuster, fertilizer, and soil conditioner may be applied during this procedure.

3.2.4 Prepared Surface

3.2.4.1 Preparation

The prepared surface shall be a maximum 1 inch below the adjoining grade of any surfaced area. New surfaces shall be blended to existing areas. The prepared surface shall be completed with a light raking to remove debris.

3.2.4.2 Area Debris

Debris and stones over a minimum 5/8 inch in any dimension shall be removed from the surface.

3.2.4.3 NOT USED.

3.2.4.4 Protection

Areas with the prepared surface shall be protected from compaction or damage by vehicular or pedestrian traffic and surface erosion.

Wildflower And Native Grasses Area

3.2.4.5 Wildflower and Native Grasses Area Preparation

The Wildflower and Native Grasses Area shall not be tilled but the existing grasses shall be killed by two separate applications of a herbicide containing glyphosate as recommended by the manufacturer.

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3.3 INSTALLATION

Prior to installing seed, any previously prepared surface compacted or damaged shall be reworked to meet the requirements of paragraph SITE PREPARATION. Seeding operations shall not take place when the wind velocity will prevent uniform seed distribution.

3.3.1 Installing Seed

Seeding method shall be Hydroseeding or Broadcasting for all seeds except

for the Wildflower and Native grasses area. Wildflower and native grass seeds shall be planted with a no-till grass drill equipped with a native grass box and seed agitator. Seeding procedure shall ensure even coverage.

Gravity feed applicators, which drop seed directly from a hopper onto the prepared soil, shall not be used because of the difficulty in achieving even coverage, unless otherwise approved. Absorbent polymer powder shall be mixed with the dry seed at the rate recommended by the manufacturer.

3.3.1.1 Broadcast Seeding

Half the total rate of seed application shall be broadcast in 1 direction, with the remainder of the seed rate broadcast at 90 degrees from the first direction. Seed shall be covered a maximum 1/4 inch depth by disk harrow, steel mat drag, cultipacker, or other approved device.

3.3.1.2 Drill Seeding

Seed shall be uniformly drilled to a maximum 1/2 inch depth and using equipment having drills a maximum 7 inches distance apart. Row markers shall be used with the drill seeder. Half the total rate of seed application shall be drilled in 1 direction, with the remainder of the seed rate drilled at 90 degrees from the first direction. The drilling equipment shall be maintained with half full seed boxes during the seeding operations.

3.3.1.3 Rolling

The entire area shall be firmed with a roller not exceeding 90 pounds per foot roller width. Slopes over a maximum 3-horizontal-to-1 vertical shall not be rolled. Areas seeded with seed drills equipped with rollers shall not be rolled.

3.3.2 Hydroseeding

Seed and fertilizer shall be added to water and thoroughly mixed to meet the rates specified. The time period for the seed to be held in the slurry shall be a maximum 24 hours. Wood cellulose fiber mulch and tackifier shall be added at the rates recommended by the manufacturer after the seed, fertilizer, and water have been thoroughly mixed to produce a homogeneous slurry. Slurry shall be uniformly applied under pressure over the entire area. The hydroseeded area shall not be rolled.

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3.3.3 Mulching

3.3.3.1 Hay or Straw Mulch

Hay or straw mulch shall be spread uniformly at the rate of 2 tons per acre.

Mulch shall be spread by hand, blower-type mulch spreader, or other approved method. Mulching shall be started on the windward side of relatively flat areas or on the upper part of steep slopes, and continued uniformly until the area is covered. The mulch shall not be bunched or clumped. Sunlight shall not be completely excluded from penetrating to the ground surface. All areas installed with seed shall be mulched on the same day as the seeding. Mulch shall be anchored immediately following

spreading.

3.3.3.2 Mechanical Anchor

Mechanical anchor shall be a V-type-wheel land packer; a scalloped-disk land packer designed to force mulch into the soil surface; or other suitable equipment.

3.3.3.3 Asphalt Adhesive Tackifier

Asphalt adhesive tackifier shall be sprayed at a rate between 10 to 13 gallons per 1000 square feet. Sunlight shall not be completely excluded from penetrating to the ground surface.

3.3.3.4 Non-Asphaltic Tackifier

Hydrophilic colloid shall be applied at the rate recommended by the manufacturer, using hydraulic equipment suitable for thoroughly mixing with water. A uniform mixture shall be applied over the area.

3.3.3.5 Asphalt Adhesive Coated Mulch

Hay or straw mulch may be spread simultaneously with asphalt adhesive applied at a rate between 10 to 13 gallons per 1000 square feet, using power mulch equipment which shall be equipped with suitable asphalt pump and nozzle. The adhesive-coated mulch shall be applied evenly over the surface. Sunlight shall not be completely excluded from penetrating to the ground surface.

3.3.3.6 Wood Cellulose Fiber, Paper Fiber, and Recycled Paper

Wood cellulose fiber, paper fiber, or recycled paper shall be applied as part of the hydroseeding operation. The mulch shall be mixed and applied in accordance with the manufacturer's recommendations.

3.3.4 Watering Seed

Watering shall be started immediately after completing the seeding of an area. Water shall be applied to supplement rainfall at a rate sufficient to ensure moist soil conditions to a minimum 1 inch depth. Run-off and puddling shall be prevented. Watering trucks shall not be driven over turf areas, unless otherwise directed. Watering of other adjacent areas or plant material shall be prevented.

3.4 SURFACE EROSION CONTROL

3.4.1 Surface Erosion Control Material

Where indicated or as directed, surface erosion control material shall be installed in accordance with manufacturer's instructions. Placement of the material shall be accomplished without damage to installed material or without deviation to finished grade.

3.4.2 Temporary Seeding

The application rate shall be 70 pounds per acre. When directed during contract delays affecting the seeding operation or when a quick cover is required to prevent surface erosion, the areas designated shall be seeded in accordance with temporary seed species listed under Paragraph SEED.

3.4.2.1 Soil Amendments

When soil amendments have not been applied to the area, the quantity of 1/2 of the required soil amendments shall be applied and the area tilled in accordance with paragraph SITE PREPARATION. The area shall be watered in accordance with paragraph Watering Seed.

3.4.2.2 Remaining Soil Amendments

The remaining soil amendments shall be applied in accordance with the paragraph Tillage when the surface is prepared for installing seed.

3.5 QUANTITY CHECK

For materials provided in bags, the empty bags shall be retained for recording the amount used. For materials provided in bulk, the weight certificates shall be retained as a record of the amount used. The amount of material used shall be compared with the total area covered to determine the rate of application used. Differences between the quantity applied and the quantity specified shall be adjusted as directed.

3.6 APPLICATION OF PESTICIDE

When application of a pesticide becomes necessary to remove a pest or disease, a pesticide treatment plan shall be submitted and coordinated with the installation pest management program.

3.6.1 Technical Representative

The certified installation pest management coordinator shall be the technical representative, and shall be present at all meetings concerning treatment measures for pest or disease control. They may be present during treatment application.

3.6.2 Application

A state certified applicator shall apply required pesticides in accordance with EPA label restrictions and recommendations. Clothing and personal protective equipment shall be used as specified on the pesticide label. A closed system is recommended as it prevents the pesticide from coming into contact with the applicator or other persons. Water for formulating shall only come from designated locations. Filling hoses shall be fitted with a backflow preventer meeting local plumbing codes or standards. Overflow shall be prevented during the filling operation. Prior to each day of use, the equipment used for applying pesticide shall be inspected for leaks, clogging, wear, or damage. Any repairs are to be performed immediately. A pesticide plan shall be submitted.

3.7 RESTORATION AND CLEAN UP

3.7.1 Restoration

Existing turf areas, pavements, and facilities that have been damaged from the seeding operation shall be restored to original condition at Contractor's expense.

3.7.2 Clean Up

Excess and waste material shall be removed from the seeded areas and shall be disposed offsite. Adjacent paved areas shall be cleaned.

3.8 PROTECTION OF INSTALLED AREAS

Immediately upon completion of the seeding operation in an area, the area shall be protected against traffic or other use by erecting barricades and providing signage as required, or as directed. Signage shall be in accordance with Section 10430 EXTERIOR SIGNAGE.

3.9 SEED ESTABLISHMENT PERIOD

3.9.1 Commencement

The seed establishment period to obtain a healthy stand of grass plants shall begin on the first day of work under this contract and shall end 3 months after the last day of the seeding operation. Written calendar time period shall be furnished for the seed establishment period. When there is more than 1 seed establishment period, the boundaries of the seeded area covered for each period shall be described. The seed establishment period shall be coordinated with Section 02930 EXTERIOR PLANTING. The seed establishment period shall be modified for inclement weather, shut down periods, or for separate completion dates of areas.

3.9.2 Satisfactory Stand of Grass Plants

Grass plants shall be evaluated for species and health when the grass plants are a minimum 1 inch high.

3.9.2.1 Lawn Area

A satisfactory stand of grass plants from the seeding operation for a lawn area shall be a minimum 40 grass plants per square foot. Bare spots shall be a maximum 6 inches square. The total bare spots shall be a maximum 2 percent of the total seeded area.

3.9.2.2 NOT USED.

3.9.3 Maintenance of Seeded Areas Except Wildflower and Natural Grass Areas During Establishment Period

Maintenance of the seeded areas shall include eradicating weeds, insects and diseases; protecting embankments and ditches from surface erosion;

maintaining erosion control materials and mulch; protecting installed areas from traffic; mowing; watering; and post-fertilization.

3.9.3.1 Mowing

All areas except wildflower and natural grass areas: All areas planted in this contract except wildflower and natural grass areas shall be mowed to a minimum 3 inch height when the turf is a maximum 4 inches high. Clippings shall be removed when the amount cut prevents sunlight from reaching the ground surface.

3.9.3.2 Post-Fertilization

The fertilizer shall be applied as recommended by the soil test. A maximum 1/2 pound per 1000 square feet of actual available nitrogen shall be provided to the grass plants. The application shall be timed prior to the advent of winter dormancy and shall be made without burning the installed grass plants.

3.9.3.3 Pesticide Treatment

Treatment for disease or pest shall be in accordance with paragraph APPLICATION OF PESTICIDE.

3.9.3.4 Repair or Reinstall

Unsatisfactory stand of grass plants and mulch shall be repaired or reinstalled, and eroded areas shall be repaired in accordance with paragraph SITE PREPARATION.

3.9.3.5 Maintenance Record

A record of each site visit shall be furnished, describing the maintenance work performed; areas repaired or reinstalled; and diagnosis for unsatisfactory stand of grass plants.

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SECTION 03101A

FORMWORK FOR CONCRETE

09/01

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. Where this specification is in conflict with the referenced publication, the Corps' specification governs. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 31	(2000) Making and Curing Concrete Test Specimens in the Field
ASTM C 39	(1999) Compressive Strength of Cylindrical Concrete Specimens
ASTM C 1074	(1998) Estimating Concrete Strength by the Maturity Method
ASTM C 1077	(1998) Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation

1.2 DESIGN REQUIREMENTS

The design, engineering, and construction of the formwork shall be the responsibility of the Contractor. The formwork shall be designed for anticipated live and dead loads and shall comply with the tolerances specified in Section 03307A CONCRETE FOR MINOR STRUCTURES, paragraph CONSTRUCTION TOLERANCES. The formwork shall be designed as a complete system with consideration given to the effects of cementitious materials and mixture additives such as fly ash, cement type, plasticizers, accelerators, retarders, air entrainment, and others. The adequacy of formwork design and construction shall be monitored prior to and during concrete placement as part of the Contractor's approved Quality Control Plan.

Design and pattern of the concrete surface shall follow the manufacturer's standard drawing. Patterning of simulated stone masonry shall appear natural and non-repeating. Seam lines or match lines caused from two of more molds coming together will not be apparent when viewing final wall. Final coloration of cast stone concrete surface shall accurately simulate the appearance of real stone including the multiple colors, shades, flecking, and veining that is apparent in real stone. It shall also

demonstrate the colors that may be apparent from aging, such as staining from oxidation, rusting and/or organic staining from soil and /or vegetation. Note that in part 1, SUBMITTAL and part 3, EXECUTION, a sample and mockup are required. Upon approval by Architect/Engineer and Owner, mockup shall serve as quality standard for the project.

Manufacturer of simulated stone masonry molds and custom coloring system: Five years experience making stone masonry molds and color stains to create formed concrete surfaces to match natural stone shapes, surface textures and colors.

Pre-Installation Meeting: Schedule conference with manufacturer representative to assure understanding of simulated stone masonry molds use, color application, requirements for construction of mockup, and to coordinate the work.

Color stain system application: Manufacturer or manufacturer's authorized representative.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Shop Drawings

Drawings and design computations for all formwork required shall be submitted at least 15 days either before fabrication on site or before delivery of prefabricated forms.

SD-03 Product Data

Materials; G, RE

Manufacturer's literature shall be submitted for plywood, concrete form hard board, form accessories, prefabricated forms, form coating, textured form liners, form-lining materials, and patterns.

Stain applicator shall be named showing at least 5 years of experience.

Stain Information.

Anti graffiti agent information.

SD-04 Samples

Sample Panels; G, RE

After shop drawings have been reviewed, sample panels for Class A finish with applied architectural treatment shall be built on the project site where directed. Sample panels shall be 6 feet long and 4 feet high with the thickness necessary to show the Class A finish, wall cap, and a contraction joint with chamfered edges. Panel forms shall include a typical joint between form panels, form tie conditions and finishes. Panels shall be protected from weather, and other damage until acceptance for work. Sample panels and mockups shall be used as job standards throughout construction.

SD-06 Test Reports

Inspection

The Contractor shall submit field inspection reports for concrete forms and embedded items.

Formwork Not Supporting Weight of Concrete; G, RE

If forms are to be removed in less than 24 hours on formwork not supporting the weight of concrete, the evaluation and results of the control cylinder tests or maturity instrumentation shall be submitted to and approved before the forms are removed.

1.4 SHOP DRAWINGS

Plan, elevation, and details to show overall pattern, joint locations, form tie locations, and end, edge, and other special conditions.

1.5 SAMPLE PANELS

Sample Panel: Within 30 days of receiving the general contract General Contractor is required to submit a 24" x 24" sample of the simulated stone masonry finish. Sample is to demonstrate the finish described in section 1.04, DESIGN REQUIREMENTS. Approval of sample panel is required by Architect/Engineer and Owner.

Samples: Form ties, sample and description, showing method of separation when forms are removed.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Class A Finish

2.1.1.1 Simulated Molds

A. Simulated masonry molds: Reusable, made of high-strength urethane, easily attachable to forms. Molds shall not compress more than 1/4 in. when concrete is poured at rate of 10 vertical feet per hour. Molds shall be removable without causing deterioration of surface or underlying concrete. The mold shall form a presentaion of Random Fieldstone with maximum relief of 2.5", average relief of 1.5 inches, liner thickness of 3.5" and stone size 3" to 26" approximate. The final intended look is a brown base showing colors of rock that would naturally be found in the Central Indiana area.

B. Release Agent: Compatible with simulated stone masonry molds and with color stain system to be applied to surface. Consult manufacturer.

C. Form ties: Shall be made of either metal or fiberglass. Using metal ties which result in a portion of the tie permanently embedded in the concrete shall be designed to separate at least one inch back from finished surface, leaving only a neat hole that can be plugged with patching material. Contractor shall submit the type of form ties to the engineer, project designer or Owner for approval prior to use in this work,

D. Mortar Joints: Joints shall be colored to simulate real mortar.

E. Color stain: Special penetrating stain mix as provided by manufacturer, shall achieve color variations present in the natural stone being simulated for this project. Stain shall create a surface finish that is breathable (allowing water vapor transmission), and that resists deterioration from water, acid, alkali, fungi, sunlight or weathering. Stain mix shall be a water borne, low V.O.C. material, less than 289 grams/liter, and shall meet requirements for weathering resistance of 2000 hours accelerated exposure measured by weather-o-meter in accordance with ASTM g-23. Scrub test 1000 revolutions. Abrasive resistance (Tabor-CF-10) 500 cycles. Adhesion ASTM D-3359 1.00MM cross cuts on glass pass 3 or higher on a scale of 1 to 5. Supply information pertaining to chemical resistance ASTM D-1308 to 87. The wall shall receive an initial brown stain prior to each individual stone pattern being stained. At least 10 different color variations of rock shall be used and no more than 10% of simulated stone shall receive the same color. An anti graffiti agent shall be applied in two coats per manufacturer's recomendations that is compatible with the stain.

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The agent shall not be the sacrificial type but shall remain effective after cleaning. *0001

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F. Two forms shall be turned over to the Contracting Officer at the end of the project to remain the property of the City of Indianapolis. The forms shall be clean and undamaged as approved by the Contracting officer.

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2.1.1.2 Class "B" Finish not used

2.1.1.3 Class "C" Finish

This class of finish shall apply to all concrete below ground surfaces and foundations. The form facing may be either tongue-and-groove lumber, plywood, concrete form hard board or steel. Wood form facing for curved or warped surfaces shall be composed of splines of lumber which can be bent to the required shape without splitting or cracking.

2.1.1.4 Class "D" Finish not used

2.2 ACCESSORIES

Ties and other similar form accessories to be partially or wholly embedded in the concrete shall be of a commercially manufactured type. After the ends or end fasteners have been removed, the embedded portion of metal ties shall terminate not less than 2 inches from any concrete surface either exposed to view or exposed to water. Removable tie rods shall not be allowed in water barrier locations. Plastic snap ties may be used in locations where the surface will not be exposed to view. Form ties shall be constructed so that the ends or end fasteners can be removed without spalling the concrete.

PART 3 EXECUTION

3.1 INSTALLATION

3.1.1 Form Construction

Forms shall be constructed true to the structural design and required alignment. The form surface and joints shall be mortar tight and supported to achieve safe performance during construction, concrete placement, and form removal. The Contractor shall continuously monitor the alignment and stability of the forms during all phases to assure the finished product will meet the required surface class or classes specified in paragraph FORMS AND FORM LINERS and tolerances specified in paragraph DESIGN REQUIREMENTS. Failure of any supporting surface either due to surface texture, deflection or form collapse shall be the responsibility of the Contractor as will the replacement or correction of unsatisfactory surfaces. When forms for continuous surfaces are placed in successive units, care shall be taken to fit the forms over the completed surface to obtain accurate alignment of the surface and to prevent leakage of mortar. Forms shall not be re-used if there is any evidence of defects which would impair the quality of the resulting concrete surface. All surfaces of used forms shall be cleaned of mortar and any other foreign material before reuse.

3.1.2 Chamfering

All exposed joints, edges and external corners shall be chamfered by molding placed in the forms unless the drawings specifically state that chamfering is to be omitted or as otherwise specified. Chamfered joints shall not be permitted where earth or rockfill is placed in contact with concrete surfaces. Chamfered joints shall be terminated twelve inches outside the limit of the earth or rockfill so that the end of the chamfers will be clearly visible.

3.1.3 Coating

Forms for exposed or painted surfaces shall be coated with form oil or a form-release agent before the form or reinforcement is placed in final position. The coating shall be used as recommended in the manufacturer's instructions. Forms for unexposed surfaces may be wet with water in lieu of coating immediately before placing concrete, except that, in cold weather when freezing temperatures are anticipated, coating shall be mandatory. Surplus coating on form surfaces and coating on reinforcing steel and construction joints shall be removed before placing concrete.

3.2 FORM REMOVAL

Forms shall not be removed without approval. The minimal time required for concrete to reach a strength adequate for removal of formwork without risking the safety of workers or the quality of the concrete depends on a number of factors including, but not limited to, ambient temperature, concrete lift heights, type and amount of concrete admixture, and type and amount of cementitious material in the concrete. It is the responsibility of the Contractor to consider all applicable factors and leave the forms in place until it is safe to remove them. In any case forms shall not be removed unless the minimum time, minimum ambient temperature, and minimum compressive strength requirements below are met, except as otherwise directed or specifically authorized. When conditions are such as to justify the requirement, forms will be required to remain in place for a longer period. All removal shall be accomplished in a manner which will prevent damage to the concrete and ensure the complete safety of the structure. Where forms support more than one element, the forms shall not be removed until the form removal criteria are met by all supported elements. Evidence that concrete has gained sufficient strength to permit removal of forms shall be determined by tests on control cylinders. All control cylinders shall be stored in the structure or as near the structure as possible so they receive the same curing conditions and protection methods as given those portions of the structure they represent. Control cylinders shall be removed from the molds at an age of no more than 24 hours. All control cylinders shall be prepared and tested in accordance with ASTM C 31 and ASTM C 39 at the expense of the Contractor by an independent laboratory that complies with ASTM C 1077 and shall be tested within 4 hours after removal from the site. After obtaining approval, the Contractor may use maturity instrumentation instead of control cylinders to determine the compressive strength of the concrete. ASTM C 1074 procedures shall be used for estimating concrete strength by means of the maturity method. All expenses associated with instrumenting the concrete and evaluating the strength using maturity relationships shall be the responsibility of the Contractor.

3.2.1 Formwork Not Supporting Weight of Concrete

Formwork for walls, columns, sides of beams, gravity structures, and other vertical type formwork not supporting the weight of concrete shall not be removed in less than 24 hours after concrete placement is completed. Form removal before 24 hours will be allowed for simple floor slab, sidewalks, and driveways provided the ambient temperature during this period has not fallen below 50 degrees F at any time since placement and evidence from

compressive tests on field-cured concrete control cylinders or maturity instrumentation indicate that the concrete has attained a compressive strength of at least 2500 psi. Control cylinders shall be prepared for each set of forms to be removed before 24 hours. The stability of the concrete shall be evaluated by a structural engineer prior to removal of the forms.

3.2.2 Formwork Supporting Weight of Concrete

Formwork supporting weight of concrete and shoring shall not be removed until structural members have acquired sufficient strength to safely support their own weight and any construction or other superimposed loads to which the supported concrete may be subjected. As a minimum, forms shall be left in place until control concrete test cylinders, or maturity instrumentation, indicate evidence the concrete has attained at least 70 percent of the compressive strength required for the structure in accordance with the quality and location requirements of Section 03307 CONCRETE FOR MINOR STRUCTURES.

3.2.3 Tunnel Forms not used

3.2.4 Special Construction Requirements for new wall facings.

A. Mockup: Build on site sixty days before work starts, using same materials, methods and work force that will be used for the project. Contracting Engineer and Owner will determine specific requirements and location, and whether mockup shall be incorporated into the project.

1. Size: 50 sq. ft., or larger if needed to adequately illustrate the pattern and texture selected.
2. Include an area to demonstrate wall mold butt joint and if appropriate, continuation of pattern through expansion joint.
3. If design includes stone texture across top of wall, include in mockup.
4. After concrete work on mockup is completed and cured for a minimum of 28 days, and after surface is determined to be acceptable for coloring, apply color stain system.
5. After coloring is determined to be acceptable by the Contracting Officer and Owner, construction of project may proceed, using mockup as quality standard.

SPECIAL TECHNIQUES - FORMING TEXTURED CONCRETE

A. Simulated Stone Masonry Molds preparation: Clean and make free of buildup prior to each pour. Inspect for blemishes or tears. Repair if needed following manufacturer's recommendations.

B. Simulated Stone Masonry Molds attachments: Place stone molds with less than 1/4 inch separation between them. Attach molds to form securely following manufacturer's recommendations.

C. Form release agent: Apply following manufacturers' recommendations.

D. Form stripping and related construction shall avoid creating defects in finished surface.

E. Where stone texture is to continue across top of wall, a finish to achieve a continuity of the formed pattern must be done by hand when concrete is being poured. Hand carve and emboss the wet, pliable concrete, aligning rustication joints with those in the formed pattern. Great care must be taken to achieve intended relief and texture as per Architect/Engineer/Owners direction.

F. If the pattern selected has molds connecting through the middle of the stones, carefully remove the seem line created by abutting molds. Match the texture and shape of the surrounding stone, avoiding visible seams or mold marks.

G. Place form ties at thinnest points of molds (high points of finished wall). Neatly patch the hole remaining after disengaging the protruding portion of the tie so that it will not be visible after coloring the concrete surface.

H. Where an expansion joint must occur at a point other than at mortar or rustication joints, such as at the face of concrete texture which is to have the appearance of stone, consult manufacturer for proper treatment of expansion material.

APPLYING COLOR STAIN SYSTEM.

A. All Simulated Stone surfaces that are to be stained and any patching that has been done in these areas shall be at least 30 days old.

B. Clean surface prior to application of stain materials to assure that surface is free of latency, dirt, dust, grease, efflorescence, paint, or other foreign material, following manufacturer's instructions for surface preparation. Do not sandblast. Preferred method to remove latency is pressure washing with water, minimum 3000 psi (a rate of three to four gallons per minute), using fan nozzle perpendicular to and at a distance of one or two feet from surface. Completed surface shall be free of blemishes, discoloration, surface voids and unnatural form marks.

C. An anti graffiti agent shall be applied per manufacturer's recommendations.

PROTECTION

A. Where exposed soil or pavement is adjacent which may spatter dirt or soil from rainfall, or where surface may be subject to over spray from other processes, provide temporary cover of completed work.

3.3 INSPECTION

Forms and embedded items shall be inspected in sufficient time prior to each concrete placement by the Contractor in order to certify to the Contracting Officer that they are ready to receive concrete. The results of each inspection shall be reported in writing.

-- End of Section --